SEQUENCE LISTING

<110> Union Chimique Belge, S.A.
       Nocka, Karl
       Pirozzi, Gregory
       Einstein, Richard

<120> NOVEL GENES ASSOCIATED WITH ALLERGIC HYPERSENSITIVITY AND MAST CELL
ACTIVATION

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Glu Glu Val Cys Tyr Thr Val Ile Asn His Ile Pro His Gln Arg Ser
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Ser Leu Ser Ser Asn Asp Asp Gly Tyr Glu Asn Ile Asp Ser Leu Thr
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Arg Lys Val Arg Gln Phe Arg Glu Arg Ser Glu Thr Glu Tyr Ala Leu
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Val Gln Arg Leu Trp Val Ser Arg Leu Leu Arg His Arg Lys Ala Gln
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ctc ttg ctg gtc aac ctg cta acc ttt ggc ctg gag gtg tgt ttg gcc      392
Leu Leu Leu Val Asn Leu Leu Thr Phe Gly Leu Glu Val Cys Leu Ala
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Ala Gly Ile Thr Tyr Val Pro Pro Leu Leu Leu Glu Val Gly Val Glu
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gag aag ttc atg acc atg gtg ctg ggt gag tca cta cat cct cct tcc      488
Glu Lys Phe Met Thr Met Val Leu Gly Glu Ser Leu His Pro Pro Ser
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Phe Leu Phe Gln Ile His Ala Thr Trp His Val Gly Gln Glu Tyr Leu
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tgc cct ggg agc tgc ttg gag gga gag gtg gtc tgc tgg gaa ggc att      584
Cys Pro Gly Ser Cys Leu Glu Gly Glu Val Val Cys Trp Glu Gly Ile
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gct ggg cag gag ggt gac cct ggg ctg agg ggg cac acc aag aga aag      632
Ala Gly Gln Glu Gly Asp Pro Gly Leu Arg Gly His Thr Lys Arg Lys
         100                 105                 110

aag aga ata cca agg aca tac ccc agt cac ctc tgg atc cct ggt cct      680
Lys Arg Ile Pro Arg Thr Tyr Pro Ser His Leu Trp Ile Pro Gly Pro
     115                 120                 125

gca cag agc ctg gct cat agg aga cac tgg aga aat gct cct aac ctt      728
Ala Gln Ser Leu Ala His Arg Arg His Trp Arg Asn Ala Pro Asn Leu
130                 135                 140                 145

tgg cta gcc ctt tta taa tttatagcga ttatctcatt taatgcttac             776
Trp Leu Ala Leu Leu
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5

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cca ttg act cat act act tcc ctt ctt gca ggc att ggt cca gtg ctg      1348
Pro Leu Thr His Thr Thr Ser Leu Leu Ala Gly Ile Gly Pro Val Leu
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ggc ctg gtc tgt gtc ccg ctc cta ggc tca gcc agt gac cac tgg cgt      1396
Gly Leu Val Cys Val Pro Leu Leu Gly Ser Ala Ser Asp His Trp Arg
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gga cgc tat ggc cgc cgc cgg ccc ttc atc tgg gca ctg tcc ttg ggc      1444
Gly Arg Tyr Gly Arg Arg Arg Pro Phe Ile Trp Ala Leu Ser Leu Gly
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atc ctg ctg agc ctc ttt ctc atc cca agg gcc ggc tgg cta gca ggg      1492
Ile Leu Leu Ser Leu Phe Leu Ile Pro Arg Ala Gly Trp Leu Ala Gly
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ctg ctg tgc ccg gat ccc agg ccc ctg gag ctg gca ctg ctc atc ctg      1540
Leu Leu Cys Pro Asp Pro Arg Pro Leu Glu Leu Ala Leu Leu Ile Leu
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ggc gtg ggg ctg ctg gac ttc tgt ggc cag gtg tgc ttc act cca ctg      1588
Gly Val Gly Leu Leu Asp Phe Cys Gly Gln Val Cys Phe Thr Pro Leu
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gag gcc ctg ctc tct gac ctc ttc cgg gac ccg gac cac tgt cgc cag      1636
Glu Ala Leu Leu Ser Asp Leu Phe Arg Asp Pro Asp His Cys Arg Gln
            270                 275                 280

gcc tac tct gtc tat gcc ttc atg atc agt ctt ggg ggc tgc ctg ggc      1684
Ala Tyr Ser Val Tyr Ala Phe Met Ile Ser Leu Gly Gly Cys Leu Gly
    285                 290                 295

tac ctc ctg cct gcc att gac tgg gac acc agt gcc ctg gcc ccc tac      1732
Tyr Leu Leu Pro Ala Ile Asp Trp Asp Thr Ser Ala Leu Ala Pro Tyr
300                 305                 310                 315

ctg ggc acc cag gag gag tgc ctc ttt ggc ctg ctc acc ctc atc ttc      1780
Leu Gly Thr Gln Glu Glu Cys Leu Phe Gly Leu Leu Thr Leu Ile Phe
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ctc acc tgc gta gca gcc aca ctg ctg gtg gct gag gag gca gcg ctg      1828
Leu Thr Cys Val Ala Ala Thr Leu Leu Val Ala Glu Glu Ala Ala Leu
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ggc ccc acc gag cca gca gaa ggg ctg tcg gcc ccc tcc ttg tcg ccc      1876
Gly Pro Thr Glu Pro Ala Glu Gly Leu Ser Ala Pro Ser Leu Ser Pro
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cac tgc tgt cca tgc cag gcc cta agc ctg gag ctc cct tcc cta atg      1924
His Cys Cys Pro Cys Gln Ala Leu Ser Leu Glu Leu Pro Ser Leu Met
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gac acg tgg gtg ctg gag gca gtg gcc tgc tcc cac ctc cac ccg cgc      1972
Asp Thr Trp Val Leu Glu Ala Val Ala Cys Ser His Leu His Pro Arg
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6

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Ser Pro Pro Arg Pro Gly Trp Phe Arg Ala Gly Ala Ser Ala Trp Thr
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tcg cca tcc tgg ata gtg cct tcc tgc tgt ccc agg tgg ccc cat ccc    2116
Ser Pro Ser Trp Ile Val Pro Ser Cys Cys Pro Arg Trp Pro His Pro
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tgt tta tgg gct cca ttg tcc agc tca gcc agt ctg tca ctg cct ata    2164
Cys Leu Trp Ala Pro Leu Ser Ser Ser Ala Ser Leu Ser Leu Pro Ile
        445                    450                    455

tgg tgt ctg ccg cag gcc tgg gtc tgg tcg cca ttt act ttg cta cac    2212
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Ala Ala Gly Ile Thr Tyr Val Pro Pro Leu Leu Leu Glu Val Gly Val
        35                  40                  45

Glu Glu Lys Phe Met Thr Met Val Leu Gly Glu Ser Leu His Pro Pro
    50                  55                  60

Ser Phe Leu Phe Gln Ile His Ala Thr Trp His Val Gly Gln Glu Tyr
65                  70                  75                  80

Leu Cys Pro Gly Ser Cys Leu Glu Gly Glu Val Val Cys Trp Glu Gly
                85                  90                  95

Ile Ala Gly Gln Glu Gly Asp Pro Gly Leu Arg Gly His Thr Lys Arg
                100                 105                 110

Lys Lys Arg Ile Pro Arg Thr Tyr Pro Ser His Leu Trp Ile Pro Gly
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Pro Ala Gln Ser Leu Ala His Arg Arg His Trp Arg Asn Ala Pro Asn
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            35   40   45

Ser Asp His Trp Arg Gly Arg Tyr Gly Arg Arg Arg Pro Phe Ile Trp
        50   55   60

Ala Leu Ser Leu Gly Ile Leu Leu Ser Leu Phe Leu Ile Pro Arg Ala
65   70   75   80

Gly Trp Leu Ala Gly Leu Leu Cys Pro Asp Pro Arg Pro Leu Glu Leu
                85   90   95

Ala Leu Leu Ile Leu Gly Val Gly Leu Leu Asp Phe Cys Gly Gln Val
            100   105   110

Cys Phe Thr Pro Leu Glu Ala Leu Leu Ser Asp Leu Phe Arg Asp Pro
            115   120   125

Asp His Cys Arg Gln Ala Tyr Ser Val Tyr Ala Phe Met Ile Ser Leu
        130   135   140

Gly Gly Cys Leu Gly Tyr Leu Leu Pro Ala Ile Asp Trp Asp Thr Ser
145   150   155   160

Ala Leu Ala Pro Tyr Leu Gly Thr Gln Glu Glu Cys Leu Phe Gly Leu
                165   170   175

Leu Thr Leu Ile Phe Leu Thr Cys Val Ala Ala Thr Leu Leu Val Ala
            180   185   190

Glu Glu Ala Ala Leu Gly Pro Thr Glu Pro Ala Glu Gly Leu Ser Ala
            195   200   205

Pro Ser Leu Ser Pro His Cys Cys Pro Cys Gln Ala Leu Ser Leu Glu
        210   215   220

9

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Leu Pro Ser Leu Met Asp Thr Trp Val Leu Glu Ala Val Ala Cys Ser
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His Leu His Pro Arg Ser Ala Gly Pro Leu Pro Val Met Ser Pro Tyr
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Val Trp Trp Trp Val Ser Pro Pro Arg Pro Gly Trp Phe Arg Ala Gly
            260                 265                 270


Ala Ser Ala Trp Thr Ser Pro Ser Trp Ile Val Pro Ser Cys Cys Pro
        275                 280                 285


Arg Trp Pro His Pro Cys Leu Trp Ala Pro Leu Ser Ser Ser Ala Ser
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Phe Thr Leu Leu His Arg
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cggcgcgggc ccaggccccg cgcgtgtgcgg ctggaggca ctgtgggggg cgggcgcgcg     360

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         15                  20                  25


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Phe Tyr Ser Thr Ser Ala Ala Ser Arg Ser Ser Ser Ala Ala Ser Ser
45                  50                  55                  60

gac gac gag cgc gag ccc ccg gga ccc cca ggg gcc gcc ccg cca ccg      604
Asp Asp Glu Arg Glu Pro Pro Gly Pro Pro Gly Ala Ala Pro Pro Pro
                65                  70                  75

ccc cgc gcc ccg gac gca cag gag ccg gag gag gac gag gcc ggc gcg      652
Pro Arg Ala Pro Asp Ala Gln Glu Pro Glu Glu Asp Glu Ala Gly Ala
                80                  85                  90

ggc tgg agc gca gcg ctg cgg gac cgc ccg ccc ccg cgc ttc gag gat      700
Gly Trp Ser Ala Ala Leu Arg Asp Arg Pro Pro Pro Arg Phe Glu Asp
            95                  100                 105

acc ggc ggt ccc acc cga aag atg ccc ccc agc gcc agt gcc gtg gac      748
Thr Gly Gly Pro Thr Arg Lys Met Pro Pro Ser Ala Ser Ala Val Asp
    110                 115                 120

ttc ttc cag ctc ttt gtc cca gac aac gtc ctc aag aac atg gtg gtg      796
Phe Phe Gln Leu Phe Val Pro Asp Asn Val Leu Lys Asn Met Val Val
125                 130                 135                 140

cag aca aac atg tat gcc aag aag ttc cag gag cgg ttt ggg agc gac      844
Gln Thr Asn Met Tyr Ala Lys Lys Phe Gln Glu Arg Phe Gly Ser Asp
                145                 150                 155

gga gcc tgg gtg gag gtg acg ctg acg gag atg aag gcg ttc ctg ggc      892
Gly Ala Trp Val Glu Val Thr Leu Thr Glu Met Lys Ala Phe Leu Gly
            160                 165                 170

tac atg atc tcc acc agc atc tcc cac tgc gag tcc gtc ctc agc atc      940
Tyr Met Ile Ser Thr Ser Ile Ser His Cys Glu Ser Val Leu Ser Ile
            175                 180                 185

tgg agc gga ggc ttc tac agc aac cgc agc ctc gcc ctc gtc atg agc      988
Trp Ser Gly Gly Phe Tyr Ser Asn Arg Ser Leu Ala Leu Val Met Ser
    190                 195                 200

cag gcc cgc ttc gag aag atc ctc aag tac ttc cac gtc gtg gcc ttc      1036
Gln Ala Arg Phe Glu Lys Ile Leu Lys Tyr Phe His Val Val Ala Phe
205                 210                 215                 220

cgc tcc agc cag acc acg cac ggg ctc tac aag gtc cag ccc ttc ctc      1084
Arg Ser Ser Gln Thr Thr His Gly Leu Tyr Lys Val Gln Pro Phe Leu
                225                 230                 235

gac tcc ctg cag aac agc ttc gac tct gcc ttc agg cct tcc caa acc      1132
Asp Ser Leu Gln Asn Ser Phe Asp Ser Ala Phe Arg Pro Ser Gln Thr
                240                 245                 250

cag gtg cta cat gaa ccc ctg atc gat gag gat cct gta ttc att gcc      1180
Gln Val Leu His Glu Pro Leu Ile Asp Glu Asp Pro Val Phe Ile Ala
        255                 260                 265
```

11

```
acg tgc aca gag cgg gag ctg cga aag agg aaa aag cgg aaa ttc agc    1228
Thr Cys Thr Glu Arg Glu Leu Arg Lys Arg Lys Arg Lys Phe Ser
    270                 275                 280

ctc tgg gtc aga caa tgt tct tcc act ggc ttc atc atc cag att tat    1276
Leu Trp Val Arg Gln Cys Ser Ser Thr Gly Phe Ile Ile Gln Ile Tyr
285                 290                 295                 300

gtc cac ctg aag gaa ggt ggg ggc cca gat ggc ctg gat gcg ctg aag    1324
Val His Leu Lys Glu Gly Gly Gly Pro Asp Gly Leu Asp Ala Leu Lys
                305                 310                 315

aat aag ccc cag ctc cac agc atg gtg gcc agg agc ctg tgc cgg aac    1372
Asn Lys Pro Gln Leu His Ser Met Val Ala Arg Ser Leu Cys Arg Asn
                320                 325                 330

gcg gca ggc aag aac tac atc att ttc acg ggg ccc agc atc acc agc    1420
Ala Ala Gly Lys Asn Tyr Ile Ile Phe Thr Gly Pro Ser Ile Thr Ser
            335                 340                 345

ctg acg ctg ttt gaa gag ttt gag aag caa ggg att tac tgc tgc ggc    1468
Leu Thr Leu Phe Glu Glu Phe Glu Lys Gln Gly Ile Tyr Cys Cys Gly
    350                 355                 360

ttg ctc cgc gcg cgg aag agt gac tgc acc ggc ctc cca ctg tcc atg    1516
Leu Leu Arg Ala Arg Lys Ser Asp Cys Thr Gly Leu Pro Leu Ser Met
365                 370                 375                 380

ctg acc aac cca gcc aca ccc ccg gcc cgg ggc cag tac caa atc aag    1564
Leu Thr Asn Pro Ala Thr Pro Pro Ala Arg Gly Gln Tyr Gln Ile Lys
                385                 390                 395

atg aag ggg aac atg tcc ttg atc tgc tgg tac aac aaa gga cac ttc    1612
Met Lys Gly Asn Met Ser Leu Ile Cys Trp Tyr Asn Lys Gly His Phe
                400                 405                 410

cgc ttc ctg acc aac gcc tac tcc ccg gtg cag cag gga gtc atc atc    1660
Arg Phe Leu Thr Asn Ala Tyr Ser Pro Val Gln Gln Gly Val Ile Ile
            415                 420                 425

aaa agg aag agt ggg gag atc cca tgc ccc ttg gcc gtg gag gcg ttt    1708
Lys Arg Lys Ser Gly Glu Ile Pro Cys Pro Leu Ala Val Glu Ala Phe
    430                 435                 440

gcc gct cac ctg agc tac atc tgc aga tac gat gac aaa tac agc aag    1756
Ala Ala His Leu Ser Tyr Ile Cys Arg Tyr Asp Asp Lys Tyr Ser Lys
445                 450                 455                 460

tat ttc att tct cat aaa cca aac aag acc tgg cag cag gtg ttc tgg    1804
Tyr Phe Ile Ser His Lys Pro Asn Lys Thr Trp Gln Gln Val Phe Trp
                465                 470                 475

ttc gcc atc agc atc gcc atc aac aat gcc tac atc ctg tac aaa atg    1852
Phe Ala Ile Ser Ile Ala Ile Asn Asn Ala Tyr Ile Leu Tyr Lys Met
                480                 485                 490

tca gac gcc tac cac gtg aag agg tac agc cgg gcg cag ttt gga gag    1900
Ser Asp Ala Tyr His Val Lys Arg Tyr Ser Arg Ala Gln Phe Gly Glu
            495                 500                 505

aga ctc gtc aga gag ctg ctg ggc ttg gag gat gcc tct ccg acc cac    1948
Arg Leu Val Arg Glu Leu Leu Gly Leu Glu Asp Ala Ser Pro Thr His
```

12

Arg Leu Val Arg Glu Leu Leu Gly Leu Glu Asp Ala Ser Pro Thr His
    510   515   520

tga tgctgggggc gcaggactcg gtcaagggag gggcaagagg aggaggagag   2001

cctgccgttc caacttgccc atcagagacc cggacacggc ctggtgtgtg gcttgctgcc 2061

tgggagggat gcacagggc tctggaggga caggatggac ctggtcagag gacggttgct   2121

gtcctcattt gcattccaag aagagcatgt cctccctcga gaaacagtgc cgccggtgtg 2181

atgagcactt acacccacgt tctcaagggc agattctctc atgacatccg tggagcttgc 2241

gaggcagcgt ggactggtga ctgtgaagga aggcccccgt ggtagaatga gctggagcac 2301

gctctaagag agatgcctgc ttcctaaaga tctacagcaa tctgggacgt ggttcaagtt 2361

caagacttga aggaagcaaa gacgccctgc atggttacaa tggctcaggt gtcaggggag 2421

gccggagggt tttccagcat ttgcctcatg ccagcacctt tgaaccggtc tcttagaaga 2481

agacacacat cctgggtgta cagtggtgaa atggggagtg ggtgcccatt ctgaaaaacg 2541

aggcattcct gctcattccc tctgcttagc tggtgggcag gggagagagg gaaatgccaa 2601

aaacttggag tgaaggatga tgctattttt tattttttaa tatatcttca ggttattttc 2661

ttactgttgc ttcagatcta atgtaaaagg cagatgtccc ctcctctcca cccccgacgc   2721

tgaccccggc ctcagtcacg gctctttgca tgatcacagt tctgtgttct ggcctgtggc 2781

agggccggga agggccgctg gcttccgaac agacgtggtt gctctccacg aggcgcatgg 2841

ggagcccgcg ggccctaagc tttgtcgcag atgtcatcat tggcagaatt acttgtcttg 2901

aaaaataagt agcattgctg aaacacacaa ccgaattctc tacgatggcc atttgctcat 2961

tgtctttcct ctgtgtgtag tgagtgaccc tggcagtgtt tgcctgctca gagtggcccc 3021

tcagaacaac agggctggcc ttggaaaaac cccaaaacag gactgtggtg acaactctgg 3081

tcaggtgtga tttgacatga gggccggagg cggttgctga cggcaggact ggagaggctg 3141

cgtgcccggc actggcagcg aggctcgtgt gtcccccagg cagatctggg cactttccca 3201

acccaggttt atgcgtctcc agggaagcct cggtgccaga gtggtgggca gatctgacca 3261

tccccacaga ccagaaacaa ggaatttctg ggattaccca gtcccccttc aacccagttg 3321

atgtaaccac ctcattttt acaaatacag aatctattct actcaggcta tgggcctcgt 3381

cctcactcag ttattgcgag tgttgctgtc cgcatgctcc gggccccacg tggctcctgt 3441

gctctagatc atggtgactc cccgcgccctg tggttggaat cgatgccacg gattgcaggc 3501

caaatttcag atcgtgtttc caaacaccct tgctgtgccc tttaatggga ttgaaagcac 3561

ttttaccaca tggagaaata tattttaat ttgtgatgct tttctacaag gtccactatt   3621

tctgagttta atgtgtttcc aacacttaag gagactctaa tgaaagctga tgaatttct   3681

tttctgtcca aacaagtaaa ataaaaataa aagtctattt agatgttaaa aaaaaaaaaa   3741

aa   3743

<210> 7
<211> 524
<212> PRT
<213> Homo sapiens

<400> 7

Met Ala Glu Gly Gly Gly Ala Arg Arg Arg Ala Pro Ala Leu Leu
1   5   10   15

Glu Ala Ala Arg Ala Arg Tyr Glu Ser Leu His Ile Ser Asp Asp Val
                20   25   30

Phe Gly Glu Ser Gly Pro Asp Ser Gly Gly Asn Pro Phe Tyr Ser Thr
            35   40   45

Ser Ala Ala Ser Arg Ser Ser Ser Ala Ala Ser Ser Asp Asp Glu Arg
        50   55   60

Glu Pro Pro Gly Pro Pro Gly Ala Ala Pro Pro Pro Arg Ala Pro
65   70   75   80

Asp Ala Gln Glu Pro Glu Glu Asp Glu Ala Gly Ala Gly Trp Ser Ala
                85   90   95

Ala Leu Arg Asp Arg Pro Pro Pro Arg Phe Glu Asp Thr Gly Gly Pro
            100   105   110

Thr Arg Lys Met Pro Pro Ser Ala Ser Ala Val Asp Phe Phe Gln Leu
            115   120   125

Phe Val Pro Asp Asn Val Leu Lys Asn Met Val Val Gln Thr Asn Met
        130   135   140

Tyr Ala Lys Lys Phe Gln Glu Arg Phe Gly Ser Asp Gly Ala Trp Val
145   150   155   160

Glu Val Thr Leu Thr Glu Met Lys Ala Phe Leu Gly Tyr Met Ile Ser
                165   170   175

Thr Ser Ile Ser His Cys Glu Ser Val Leu Ser Ile Trp Ser Gly Gly
            180   185   190

Phe Tyr Ser Asn Arg Ser Leu Ala Leu Val Met Ser Gln Ala Arg Phe

                                    14

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              195                    200                    205
Glu Lys Ile Leu Lys Tyr Phe His Val Val Ala Phe Arg Ser Ser Gln
    210                    215                    220

Thr Thr His Gly Leu Tyr Lys Val Gln Pro Phe Leu Asp Ser Leu Gln
225                    230                    235                    240

Asn Ser Phe Asp Ser Ala Phe Arg Pro Ser Gln Thr Gln Val Leu His
              245                    250                    255

Glu Pro Leu Ile Asp Glu Asp Pro Val Phe Ile Ala Thr Cys Thr Glu
              260                    265                    270

Arg Glu Leu Arg Lys Arg Lys Lys Arg Lys Phe Ser Leu Trp Val Arg
              275                    280                    285

Gln Cys Ser Ser Thr Gly Phe Ile Ile Gln Ile Tyr Val His Leu Lys
              290                    295                    300

Glu Gly Gly Gly Pro Asp Gly Leu Asp Ala Leu Lys Asn Lys Pro Gln
305                    310                    315                    320

Leu His Ser Met Val Ala Arg Ser Leu Cys Arg Asn Ala Ala Gly Lys
                   325                    330                    335

Asn Tyr Ile Ile Phe Thr Gly Pro Ser Ile Thr Ser Leu Thr Leu Phe
              340                    345                    350

Glu Glu Phe Glu Lys Gln Gly Ile Tyr Cys Cys Gly Leu Leu Arg Ala
         355                    360                    365

Arg Lys Ser Asp Cys Thr Gly Leu Pro Leu Ser Met Leu Thr Asn Pro
    370                    375                    380

Ala Thr Pro Pro Ala Arg Gly Gln Tyr Gln Ile Lys Met Lys Gly Asn
385                    390                    395                    400

Met Ser Leu Ile Cys Trp Tyr Asn Lys Gly His Phe Arg Phe Leu Thr
                   405                    410                    415

Asn Ala Tyr Ser Pro Val Gln Gln Gly Val Ile Ile Lys Arg Lys Ser
              420                    425                    430

Gly Glu Ile Pro Cys Pro Leu Ala Val Glu Ala Phe Ala Ala His Leu
              435                    440                    445
```

15

```
Ser Tyr Ile Cys Arg Tyr Asp Asp Lys Tyr Ser Lys Tyr Phe Ile Ser
    450                 455                 460


His Lys Pro Asn Lys Thr Trp Gln Gln Val Phe Trp Phe Ala Ile Ser
465                 470                 475                 480


Ile Ala Ile Asn Asn Ala Tyr Ile Leu Tyr Lys Met Ser Asp Ala Tyr
                485                 490                 495


His Val Lys Arg Tyr Ser Arg Ala Gln Phe Gly Glu Arg Leu Val Arg
                500                 505                 510


Glu Leu Leu Gly Leu Glu Asp Ala Ser Pro Thr His
        515                 520
```

<210> 8
<211> 1998
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (162)..(635)
<223> 1st open reading frame

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<400> 8
tgcatcagga ctttaccaga taatgttctt ccagatctga aaaggaaaat gcctaaaaga      60

gcttccaaac tcatttttga ataatactag gctacaaaga attacactgt gaattcatta     120

agggtaacac caaatcacta aacagcactg tttgtacaga a atg tcg aaa agc tgt     176
                                          Met Ser Lys Ser Cys
                                            1               5

gga aat aat tta gcg gcc att tct gta gga att tcg ctt ctt tta ctc     224
Gly Asn Asn Leu Ala Ala Ile Ser Val Gly Ile Ser Leu Leu Leu Leu
             10              15              20

tta gtg gtt tgt gga att ggg tgt gtt tgg cac tgg aaa cac cgt gtt     272
Leu Val Val Cys Gly Ile Gly Cys Val Trp His Trp Lys His Arg Val
         25              30              35

gcc aca cga ttt acc tta ccg agg ttt tta caa agg aga agc agc agg     320
Ala Thr Arg Phe Thr Leu Pro Arg Phe Leu Gln Arg Arg Ser Ser Arg
     40              45              50

aga aaa gtc tgt act aaa aca ttc ttg ggc ccc cgc atc att ggc tta     368
Arg Lys Val Cys Thr Lys Thr Phe Leu Gly Pro Arg Ile Ile Gly Leu
 55              60              65

agg cat gaa atc tca gtt gaa acc caa gac cac aaa tct gct gtc agg     416
Arg His Glu Ile Ser Val Glu Thr Gln Asp His Lys Ser Ala Val Arg
70              75              80              85
```

16

```
gga aat aac aca cac gac aac tat gaa aat gtg gaa gca ggt cct ccc        464
Gly Asn Asn Thr His Asp Asn Tyr Glu Asn Val Glu Ala Gly Pro Pro
                90                      95                  100

aaa gct aaa gga aaa acc gat aag gaa cta tat gaa aac aca ggg cag        512
Lys Ala Lys Gly Lys Thr Asp Lys Glu Leu Tyr Glu Asn Thr Gly Gln
            105                     110                 115

tct aat ttc gag gag cat atc tat gga aat gag aca tct tct gac tat        560
Ser Asn Phe Glu Glu His Ile Tyr Gly Asn Glu Thr Ser Ser Asp Tyr
            120                 125                 130

tat aac ttc cag aag cct cgt cct tct gaa gtt cct caa gat gaa gat        608
Tyr Asn Phe Gln Lys Pro Arg Pro Ser Glu Val Pro Gln Asp Glu Asp
        135                 140                 145

ata tac att ctt cca gat tca tat tag cttttcaaaa tattgacttt             655
Ile Tyr Ile Leu Pro Asp Ser Tyr
150                 155

tgttattgga tgataaatat tcactgtaat ttttcaacag caaagacaag gaatcaaact     715

aaatgttgat caactgtaga ctggataaag aaaatgtggt acacatacac catagaatat     775

tatgcagccg taaaaaaaga acaaaactaa catgggaaca gaaaatcaaa taccacatat     835

tctcacttaa aagtgggagc taaataataa gaacacatgg agagaaggag aggaacaaca     895

gacactgggg cctacttgag ggaggacagt ggaaggaggg agaggttcag ggaaaaaaaa     955

aatatcaggt actatgctta gtacacacat gatgaaataa tctgtacacc aaacccccaa     1015

gtcacaagtg ttcctacata acaaacctga acatgtaccc ctgaacataa aattataatt     1075

aaaatattaa aaataattca ctgtgatttt tattgtactg atgccattct taatcaagtt     1135

ctgataagtg gatggtctct gcctatctcc accttctga atcctatgtg tatcgctgtg      1195

gattaattct agatatcttc tccaccctcc ttgcaccaga ctaaatctgt attatgtgat     1255

attgattctt ccttctaaat attacccgtt atctctttcc tttatttcta ccattatctt     1315

tatctggctc agaattattg tcataggctc ctaactgttc ctcctgcttc tagtttctac     1375

ccactcaatc aattaccgat ggtgttgcca gatttatctt cagaaaatat tcctaacagc     1435

cacattattt ctttcactta aaatgtttta atgccccctc tttgcaaaag acatataccc     1495

cataatttga actccaaaat ttatggtttt ccacaattgg ttccaattca cttttccagt     1555

gacttctctt actatctctc atttctttgc cttcagcaga atcatcttaa aacctgccaa     1615

acttatcctt ccttcacagc tttgcttttc tgcctcttct ctcaagcctg cttcagatca     1675

taagttcttc cacacatctc ctgaatcact ccaaacccgc atttaccttt ttattttctg     1735

atataagctt tgatgcctct tcaattctta ggacatttaa acatatgaat gttgccacag     1795

cattttatta cctagcttca tatgaaaatg tcttaaattc ccacctaaat gaaaagaaac     1855
```

17

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tgcccaaatg cctagaacat cacataaggc actaaatgcc tcatgtttta ctgacgggaa    1915

ttgaattgta cattttgctg agtagttttg agaaaaaaat ctaataaatt catctgttat    1975

tcatccataa aaaaaaaaaa aaa                                            1998
```

<210> 9
<211> 157
<212> PRT
<213> Homo sapiens

<400> 9

```
Met Ser Lys Ser Cys Gly Asn Asn Leu Ala Ala Ile Ser Val Gly Ile
1               5                   10                  15

Ser Leu Leu Leu Leu Leu Val Val Cys Gly Ile Gly Cys Val Trp His
            20                  25                  30

Trp Lys His Arg Val Ala Thr Arg Phe Thr Leu Pro Arg Phe Leu Gln
        35                  40                  45

Arg Arg Ser Ser Arg Arg Lys Val Cys Thr Lys Thr Phe Leu Gly Pro
    50                  55                  60

Arg Ile Ile Gly Leu Arg His Glu Ile Ser Val Glu Thr Gln Asp His
65                  70                  75                  80

Lys Ser Ala Val Arg Gly Asn Asn Thr His Asp Asn Tyr Glu Asn Val
                85                  90                  95

Glu Ala Gly Pro Pro Lys Ala Lys Gly Lys Thr Asp Lys Glu Leu Tyr
            100                 105                 110

Glu Asn Thr Gly Gln Ser Asn Phe Glu Glu His Ile Tyr Gly Asn Glu
        115                 120                 125

Thr Ser Ser Asp Tyr Tyr Asn Phe Gln Lys Pro Arg Pro Ser Glu Val
    130                 135                 140

Pro Gln Asp Glu Asp Ile Tyr Ile Leu Pro Asp Ser Tyr
145                 150                 155
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<210> 10
<211> 1998
<212> DNA
<213> Homo sapiens

<220>
<221> CDS

<222> (373)..(651)
<223> 2nd open reading frame

<400> 10
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tgcatcagga ctttaccaga taatgttctt ccagatctga aaaggaaaat gcctaaaaga      60

gcttccaaac tcatttttga ataatactag gctacaaaga attacactgt gaattcatta     120

agggtaacac caaatcacta aacagcactg tttgtacaga aatgtcgaaa agctgtggaa     180

ataatttagc ggccatttct gtaggaattt cgcttctttt actcttagtg gtttgtggaa     240

ttgggtgtgt ttggcactgg aaacaccgtg ttgccacacg atttacctta ccgaggtttt     300

tacaaaggag aagcagcagg agaaaagtcc gtactaaaac attcttgggc cccgcatca     360
```

```
ttggcttaag gc atg aaa tct cag ttg aaa ccc aag acc aca aat ctg ctg    411
              Met Lys Ser Gln Leu Lys Pro Lys Thr Thr Asn Leu Leu
               1               5                      10

tca ggg gaa ata aca cac acg aca act atg aaa atg tgg aag cag gtc      459
Ser Gly Glu Ile Thr His Thr Thr Thr Met Lys Met Trp Lys Gln Val
   15                  20                  25

ctc cca aag cta aag gaa aaa ccg ata agg aac tat atg aaa aca cag      507
Leu Pro Lys Leu Lys Glu Lys Pro Ile Arg Asn Tyr Met Lys Thr Gln
30                  35                  40                  45

ggc agt cta att tcg agg agc ata tct atg gaa atg aga cat ctt ctg      555
Gly Ser Leu Ile Ser Arg Ser Ile Ser Met Glu Met Arg His Leu Leu
                50                  55                  60

act att ata act tcc aga agc ctc gtc ctt ctg aag ttc ctc aag atg      603
Thr Ile Ile Thr Ser Arg Ser Leu Val Leu Leu Lys Phe Leu Lys Met
               65                  70                  75

aag ata tat aca ttc ttc cag att cat att agc ttt tca aaa tat tga      651
Lys Ile Tyr Thr Phe Phe Gln Ile His Ile Ser Phe Ser Lys Tyr
           80                  85                  90
```

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cttttgttat tggatgataa atattcactg taattttttca acagcaaaga caaggaatca    711

aactaaatgt tgatcaactg tagactggat aaagaaaatg tggtacacat acaccataga     771

atattatgca gccgtaaaaa aagaacaaaa ctaacatggg aacagaaaat caaataccac     831

atattctcac ttaaaagtgg gagctaaata ataagaacac atggagagaa ggagaggaac     891

aacagacact ggggcctact tgagggagga cagtggaagg agggagaggt tcagggaaaa     951

aaaaaatatc aggtactatg cttagtacac acatgatgaa ataatctgta caccaaaccc    1011

ccaagtcaca agtgttccta cataacaaac ctgaacatgt acccctgaac ataaaattat    1071

aattaaaata ttaaaaataa ttcactgtga tttttattgt actgatgcca ttcttaatca    1131

agttctgata agtggatggt ctctgcctat ctccacctt ctgaatccta tgtgtatcgc      1191

tgtggattaa ttctagatat cttctccacc ctccttgcac cagactaaat ctgtattatg    1251
```

19

```
tgatattgat tcttccttct aaatattacc cgttatctct ttcctttatt tctaccatta    1311

tctttatctg gctcagaatt attgtcatag gctcctaact gttcctcctg cttctagttt    1371

ctacccactc aatcaattac cgatggtgtt gccagattta tcttcagaaa atattcctaa    1431

cagccacatt atttctttca cttaaaatgt tttaatgccc cctctttgca aaagacataa    1491

tacccataat ttgaactcca aaatttatgt ttttccacaa ttggttccaa ttcacttttc    1551

cagtgacttc tcttactatc tctcatttct ttgccttcag cagaatcatc ttaaaacctg    1611

ccaaacttat ccttccttca cagctttgct tttctgcctc ttctctcaag cctgcttcag    1671

atcataagtt cttccacaca tctcctgaat cactccaaac ccgcatttac ctttttattt    1731

tctgatataa gctttgatgc ctcttcaatt cttaggacat ttaaacatat gaatgttgcc    1791

acagcatttt attacctagc ttcatatgaa aatgtcttaa attcccacct aaatgaaaag    1851

aaactgccca aatgcctaga acatcacata aggcactaaa tgcctcatgt tttactgacg    1911

ggaattgaat tgtacatttt gctgagtagt tttgagaaaa aaatctaata aattcatctg    1971

ttattcatcc ataaaaaaaa aaaaaaa                                        1998
```

<210> 11
<211> 92
<212> PRT
<213> Homo sapiens

<400> 11

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Met Lys Ser Gln Leu Lys Pro Lys Thr Thr Asn Leu Leu Ser Gly Glu
1               5                   10                  15

Ile Thr His Thr Thr Thr Met Lys Met Trp Lys Gln Val Leu Pro Lys
                20                  25                  30

Leu Lys Glu Lys Pro Ile Arg Asn Tyr Met Lys Thr Gln Gly Ser Leu
            35                  40                  45

Ile Ser Arg Ser Ile Ser Met Glu Met Arg His Leu Leu Thr Ile Ile
        50                  55                  60

Thr Ser Arg Ser Leu Val Leu Leu Lys Phe Leu Lys Met Lys Ile Tyr
65                  70                  75                  80

Thr Phe Phe Gln Ile His Ile Ser Phe Ser Lys Tyr
                85                  90
```

<210> 12
<211> 1662
<212> DNA

20

<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(1662)
<223>

<400> 12

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atg gtc cag agg ctg tgg gtg agc cgc ctg ctg cgg cac cgg aaa gcc       48
Met Val Gln Arg Leu Trp Val Ser Arg Leu Leu Arg His Arg Lys Ala
1               5                   10                  15

cag ctc ttg ctg gtc aac ctg cta acc ttt ggc ctg gag gtg tgt ttg       96
Gln Leu Leu Leu Val Asn Leu Leu Thr Phe Gly Leu Glu Val Cys Leu
                20                  25                  30

gcc gca ggc atc acc tat gtg ccg cct ctg ctg ctg gaa gtg ggg gta      144
Ala Ala Gly Ile Thr Tyr Val Pro Pro Leu Leu Leu Glu Val Gly Val
            35                  40                  45

gag gag aag ttc atg acc atg gtg ctg ggc att ggt cca gtg ctg ggc      192
Glu Glu Lys Phe Met Thr Met Val Leu Gly Ile Gly Pro Val Leu Gly
        50                  55                  60

ctg gtc tgt gtc ccg ctc cta ggc tca gcc agt gac cac tgg cgt gga      240
Leu Val Cys Val Pro Leu Leu Gly Ser Ala Ser Asp His Trp Arg Gly
65                  70                  75                  80

cgc tat ggc cgc cgc cgg ccc ttc atc tgg gca ctg tcc ttg ggc atc      288
Arg Tyr Gly Arg Arg Arg Pro Phe Ile Trp Ala Leu Ser Leu Gly Ile
                85                  90                  95

ctg ctg agc ctc ttt ctc atc cca agg gcc ggc tgg cta gca ggg ctg      336
Leu Leu Ser Leu Phe Leu Ile Pro Arg Ala Gly Trp Leu Ala Gly Leu
                100                 105                 110

ctg tgc ccg gat ccc agg ccc ctg gag ctg gca ctg ctc atc ctg ggc      384
Leu Cys Pro Asp Pro Arg Pro Leu Glu Leu Ala Leu Leu Ile Leu Gly
            115                 120                 125

gtg ggg ctg ctg gac ttc tgt ggc cag gtg tgc ttc act cca ctg gag      432
Val Gly Leu Leu Asp Phe Cys Gly Gln Val Cys Phe Thr Pro Leu Glu
        130                 135                 140

gcc ctg ctc tct gac ctc ttc cgg gac ccg gac cac tgt cgc cag gcc      480
Ala Leu Leu Ser Asp Leu Phe Arg Asp Pro Asp His Cys Arg Gln Ala
145                 150                 155                 160

tac tct gtc tat gcc ttc atg atc agt ctt ggg ggc tgc ctg ggc tac      528
Tyr Ser Val Tyr Ala Phe Met Ile Ser Leu Gly Gly Cys Leu Gly Tyr
                165                 170                 175

ctc ctg cct gcc att gac tgg gac acc agt gcc ctg gcc ccc tac ctg      576
Leu Leu Pro Ala Ile Asp Trp Asp Thr Ser Ala Leu Ala Pro Tyr Leu
            180                 185                 190

ggc acc cag gag gag tgc ctc ttt ggc ctg ctc acc ctc atc ttc ctc      624
Gly Thr Gln Glu Glu Cys Leu Phe Gly Leu Leu Thr Leu Ile Phe Leu
        195                 200                 205
```

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```
acc tgc gta gca gcc aca ctg ctg gtg gct gag gag gca gcg ctg ggc    672
Thr Cys Val Ala Ala Thr Leu Leu Val Ala Glu Glu Ala Ala Leu Gly
    210                 215                 220

ccc acc gag cca gca gaa ggg ctg tcg gcc ccc tcc ttg tcg ccc cac    720
Pro Thr Glu Pro Ala Glu Gly Leu Ser Ala Pro Ser Leu Ser Pro His
225                 230                 235                 240

tgc tgt cca tgc cgg gcc cgc ttg gct ttc cgg aac ctg ggc gcc ctg    768
Cys Cys Pro Cys Arg Ala Arg Leu Ala Phe Arg Asn Leu Gly Ala Leu
                245                 250                 255

ctt ccc cgg ctg cac cag ctg tgc tgc cgc atg ccc cgc acc ctg cgc    816
Leu Pro Arg Leu His Gln Leu Cys Cys Arg Met Pro Arg Thr Leu Arg
                260                 265                 270

cgg ctc ttc gtg gct gag ctg tgc agc tgg atg gca ctc atg acc ttc    864
Arg Leu Phe Val Ala Glu Leu Cys Ser Trp Met Ala Leu Met Thr Phe
        275                 280                 285

acg ctg ttt tac acg gat ttc gtg ggc gag ggg ctg tac cag ggc gtg    912
Thr Leu Phe Tyr Thr Asp Phe Val Gly Glu Gly Leu Tyr Gln Gly Val
        290                 295                 300

ccc aga gct gag ccg ggc acc gag gcc cgg aga cac tat gat gaa ggc    960
Pro Arg Ala Glu Pro Gly Thr Glu Ala Arg Arg His Tyr Asp Glu Gly
305                 310                 315                 320

gtt cgg atg ggc agc ctg ggg ctg ttc ctg cag tgc gcc atc tcc ctg   1008
Val Arg Met Gly Ser Leu Gly Leu Phe Leu Gln Cys Ala Ile Ser Leu
                325                 330                 335

gtc ttc tct ctg gtc atg gac cgg ctg gtg cag cga ttc ggc act cga   1056
Val Phe Ser Leu Val Met Asp Arg Leu Val Gln Arg Phe Gly Thr Arg
                340                 345                 350

gca gtc tat ttg gcc agt gtg gca gct ttc cct gtg gct gcc ggt gcc   1104
Ala Val Tyr Leu Ala Ser Val Ala Ala Phe Pro Val Ala Ala Gly Ala
        355                 360                 365

aca tgc ctg tcc cac agt gtg gcc gtg gtg aca gct tca gcc gcc ctc   1152
Thr Cys Leu Ser His Ser Val Ala Val Val Thr Ala Ser Ala Ala Leu
        370                 375                 380

acc ggg ttc acc ttc tca gcc ctg cag atc ctg ccc tac aca ctg gcc   1200
Thr Gly Phe Thr Phe Ser Ala Leu Gln Ile Leu Pro Tyr Thr Leu Ala
385                 390                 395                 400

tcc ctc tac cac cgg gag aag cag gtg ttc ctg ccc aaa tac cga ggg   1248
Ser Leu Tyr His Arg Glu Lys Gln Val Phe Leu Pro Lys Tyr Arg Gly
                405                 410                 415

gac act gga ggt gct agc agt gag gac agc ctg atg acc agc ttc ctg   1296
Asp Thr Gly Gly Ala Ser Ser Glu Asp Ser Leu Met Thr Ser Phe Leu
                420                 425                 430

cca ggc cct aag cct gga gct ccc ttc cct aat gga cac gtg ggt gct   1344
Pro Gly Pro Lys Pro Gly Ala Pro Phe Pro Asn Gly His Val Gly Ala
        435                 440                 445

gga ggc agt ggc ctg ctc cca cct cca ccc gcg ctc tgc ggg gcc tct   1392
Gly Gly Ser Gly Leu Leu Pro Pro Pro Pro Ala Leu Cys Gly Ala Ser
```

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```
Gly Gly Ser Gly Leu Leu Pro Pro Pro Ala Leu Cys Gly Ala Ser
    450                 455                 460

gcc tgt gat gtc tcc gta cgt gtg gtg gtg ggt gag ccc acc gag gcc      1440
Ala Cys Asp Val Ser Val Arg Val Val Val Gly Glu Pro Thr Glu Ala
465                 470                 475                 480

agg gtg gtt ccg ggc cgg ggc atc tgc ctg gac ctc gcc atc ctg gat      1488
Arg Val Val Pro Gly Arg Gly Ile Cys Leu Asp Leu Ala Ile Leu Asp
                485                 490                 495

agt gcc ttc ctg ctg tcc cag gtg gcc cca tcc ctg ttt atg ggc tcc      1536
Ser Ala Phe Leu Leu Ser Gln Val Ala Pro Ser Leu Phe Met Gly Ser
            500                 505                 510

att gtc cag ctc agc cag tct gtc act gcc tat atg gtg tct gcc gca      1584
Ile Val Gln Leu Ser Gln Ser Val Thr Ala Tyr Met Val Ser Ala Ala
            515                 520                 525

ggc ctg ggt ctg gtc gcc att tac ttt gct aca cag gta gta ttt gac      1632
Gly Leu Gly Leu Val Ala Ile Tyr Phe Ala Thr Gln Val Val Phe Asp
        530                 535                 540

aag agc gac ttg gcc aaa tac tca gcg tag                              1662
Lys Ser Asp Leu Ala Lys Tyr Ser Ala
545                 550
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<210> 13
<211> 553
<212> PRT
<213> Homo sapiens

<400> 13

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Met Val Gln Arg Leu Trp Val Ser Arg Leu Leu Arg His Arg Lys Ala
1                 5                 10                15


Gln Leu Leu Leu Val Asn Leu Leu Thr Phe Gly Leu Glu Val Cys Leu
                20                25                30


Ala Ala Gly Ile Thr Tyr Val Pro Pro Leu Leu Leu Glu Val Gly Val
            35                40                45


Glu Glu Lys Phe Met Thr Met Val Leu Gly Ile Gly Pro Val Leu Gly
        50                55                60


Leu Val Cys Val Pro Leu Leu Gly Ser Ala Ser Asp His Trp Arg Gly
65                70                75                80


Arg Tyr Gly Arg Arg Arg Pro Phe Ile Trp Ala Leu Ser Leu Gly Ile
                85                90                95


Leu Leu Ser Leu Phe Leu Ile Pro Arg Ala Gly Trp Leu Ala Gly Leu
            100               105               110
```

```
Leu Cys Pro Asp Pro Arg Pro Leu Glu Leu Ala Leu Leu Ile Leu Gly
        115                 120                 125

Val Gly Leu Leu Asp Phe Cys Gly Gln Val Cys Phe Thr Pro Leu Glu
    130                 135                 140

Ala Leu Leu Ser Asp Leu Phe Arg Asp Pro Asp His Cys Arg Gln Ala
145                 150                 155                 160

Tyr Ser Val Tyr Ala Phe Met Ile Ser Leu Gly Gly Cys Leu Gly Tyr
                165                 170                 175

Leu Leu Pro Ala Ile Asp Trp Asp Thr Ser Ala Leu Ala Pro Tyr Leu
            180                 185                 190

Gly Thr Gln Glu Glu Cys Leu Phe Gly Leu Leu Thr Leu Ile Phe Leu
        195                 200                 205

Thr Cys Val Ala Ala Thr Leu Leu Val Ala Glu Glu Ala Ala Leu Gly
    210                 215                 220

Pro Thr Glu Pro Ala Glu Gly Leu Ser Ala Pro Ser Leu Ser Pro His
225                 230                 235                 240

Cys Cys Pro Cys Arg Ala Arg Leu Ala Phe Arg Asn Leu Gly Ala Leu
            245                 250                 255

Leu Pro Arg Leu His Gln Leu Cys Cys Arg Met Pro Arg Thr Leu Arg
        260                 265                 270

Arg Leu Phe Val Ala Glu Leu Cys Ser Trp Met Ala Leu Met Thr Phe
    275                 280                 285

Thr Leu Phe Tyr Thr Asp Phe Val Gly Glu Gly Leu Tyr Gln Gly Val
    290                 295                 300

Pro Arg Ala Glu Pro Gly Thr Glu Ala Arg Arg His Tyr Asp Glu Gly
305                 310                 315                 320

Val Arg Met Gly Ser Leu Gly Leu Phe Leu Gln Cys Ala Ile Ser Leu
            325                 330                 335

Val Phe Ser Leu Val Met Asp Arg Leu Val Gln Arg Phe Gly Thr Arg
            340                 345                 350
```

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```
Ala Val Tyr Leu Ala Ser Val Ala Ala Phe Pro Val Ala Ala Gly Ala
        355                 360                 365

Thr Cys Leu Ser His Ser Val Ala Val Thr Ala Ser Ala Ala Leu
        370                 375                 380

Thr Gly Phe Thr Phe Ser Ala Leu Gln Ile Leu Pro Tyr Thr Leu Ala
385                 390                 395                 400

Ser Leu Tyr His Arg Glu Lys Gln Val Phe Leu Pro Lys Tyr Arg Gly
                405                 410                 415

Asp Thr Gly Gly Ala Ser Ser Glu Asp Ser Leu Met Thr Ser Phe Leu
            420                 425                 430

Pro Gly Pro Lys Pro Gly Ala Pro Phe Pro Asn Gly His Val Gly Ala
        435                 440                 445

Gly Gly Ser Gly Leu Leu Pro Pro Pro Ala Leu Cys Gly Ala Ser
        450                 455                 460

Ala Cys Asp Val Ser Val Arg Val Val Val Gly Glu Pro Thr Glu Ala
465                 470                 475                 480

Arg Val Val Pro Gly Arg Gly Ile Cys Leu Asp Leu Ala Ile Leu Asp
            485                 490                 495

Ser Ala Phe Leu Leu Ser Gln Val Ala Pro Ser Leu Phe Met Gly Ser
            500                 505                 510

Ile Val Gln Leu Ser Gln Ser Val Thr Ala Tyr Met Val Ser Ala Ala
        515                 520                 525

Gly Leu Gly Leu Val Ala Ile Tyr Phe Ala Thr Gln Val Val Phe Asp
        530                 535                 540

Lys Ser Asp Leu Ala Lys Tyr Ser Ala
545                 550
```

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